

REMARKS

Claims 1-13 are pending in this application. Claim 1 is independent.

The conventional deposition of a relatively thick oil film on the surface of a steel sheet prior to forming poses problems of contamination of workshops and tools, and requires the use of large quantities of degreasing agents in order to clean the sheet and considerable means for treating the effluents coming from the cleaning operation. Specification at page 2, lines 5-11.

The present invention makes it possible to significantly reduce the quantity of lubricating oil deposited on a steel sheet before the sheet is formed. Specification at page 2, lines 21, 23-25.

The present invention combines two steps: (i) treating the coated steel sheet with an aqueous treatment solution containing sulfate ions SO_4^{2-} , and (ii) applying a lubricating oil film with a weight between 0.2 and 0.5 g/m².

Claims 1-13 are rejected under 35 U.S.C. 103(a) over WO 00/15878, whose corresponding English-language equivalent is U.S. Patent No. 6,528,182 ("Bello").

Bello describes an invention whose object is to provide a pre-lubricated zinc-coated plate with higher performances than those obtained by phosphatisation. Bello at column 2, lines 31-33.

Bello has for an object to offer a treatment more respectful of the environment at the level of the effluents that it generates. Bello at column 2, lines 33-36. Nevertheless, this object refers to Bello at column 2, line 29, where the phosphatisation treatment is described as a treatment generating effluents containing phosphates. Bello does not describe that a treatment solution containing sulfate ions could help reduce the quantity of lubricating oil.

On the contrary, Bello acknowledges at column 8, line 11 that a layer of about 1 g/m² is considered as "oiled in standard manner".

Thus, Bello fails to suggest the independent Claim 1 limitation of "treating the coated steel sheet with an aqueous treatment solution containing sulfate ions SO_4^{2-} in a concentration of not less than 0.01 mol/l to obtain on the metal coating an upper layer based on zinc hydroxysulfate and zinc sulfate".

Furthermore, Bello and the previous cited art clearly accept that a significant lubricating film weight must be used on steel sheet to obtain proper forming.

Decreasing the film weight by 2 to 5 times compared to the standard amount is a very significant improvement which cannot be considered as a routine optimization by one of ordinary skill in the art.

Thus, Bello fails to suggest the independent Claim 1 limitation of "applying on the upper layer based on zinc hydroxysulfate and zinc sulfate a lubricating oil film with a weight of between 0.2 and 0.5 g/m²".

Furthermore, Bello fails to suggest the independent Claim 1 combination of (i) a treatment solution containing sulfate ions and (ii) a very thin lubricating oil film in order to reduce the quantity of lubricating oil.

Because Bello fails to suggest all the limitations of independent Claim 1, the prior art rejection should be withdrawn.

Claims 1-17 are rejected on the ground of nonstatutory non-obviousness-type double patenting over Claims 7-18 of Bello. Claims 7-18 of Bello are directed to a method for forming a steel plate coated with a metal layer based on zinc, the method comprising the steps of treating the surface of the coated plate with an aqueous treatment solution, applying a film of lubricating oil on the resulting treated surface and forming the plate.

However, Claims 7-18 of Bello are silent about any amount of lubricating oil.

As discussed above, Bello and the previous cited art clearly accept that a significant lubricating film weight must be used on steel sheet to obtain proper forming.

Decreasing the film weight by 2 to 5 times compared to the standard amount is a very significant improvement which cannot be considered as a routine optimization by one of ordinary skill in the art.

Thus, the silence about an amount of lubricating oil in Claims 7-18 of Bello fails to suggest the independent Claim 1 limitation of "applying on the upper layer based on zinc hydroxysulfate and zinc sulfate a lubricating oil film with a weight of between 0.2 and 0.5 g/m²".

Because Claims 7-18 of Bello fails to suggest all the limitations of independent Claim 1, the obviousness-type double patenting rejection over Claims 7-18 of Bello should be withdrawn.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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